Title (en)

DIRECT PRINTING OF 3-D MICROBATTERIES AND ELECTRODES

Title (de)

DIREKTDRUCK VON 3D-MIKROBATTERIEN UND ELEKTRODEN

Title (fr)

IMPRESSION DIRECTE DE MICROBATTERIES ET D'ÉLECTRODES 3D

Publication

EP 3596764 A4 20200415 (EN)

Application

EP 18766918 A 20180316

Priority

- US 201762472889 P 20170317
- US 2018022997 W 20180316

Abstract (en)

[origin: WO2018170474A1] Various embodiments disclosed relate to novel methods of fabricating 3-D Li ion batteries using direct nanoimprint lithography. The present invention includes methods of fabricating high surface area electrodes, including imprint patterning of high aspect ratio parallel grating style electrodes. The method includes coating a substrate with an ink containing nanoparticles and subsequently annealing the ink into a desired pattern.

IPC 8 full level

H01M 4/04 (2006.01); **H01M 4/74** (2006.01)

CPC (source: EP US)

G03F 7/0002 (2013.01 - US); **H01M 4/0404** (2013.01 - EP US); **H01M 4/0414** (2013.01 - EP); **H01M 4/0433** (2013.01 - US); **H01M 4/0471** (2013.01 - EP US); **H01M 4/131** (2013.01 - EP US); **H01M 4/1391** (2013.01 - EP US); **H01M 4/366** (2013.01 - US); **H01M 4/483** (2013.01 - EP); **H01M 4/485** (2013.01 - EP); **H01M 4/505** (2013.01 - EP US); **H01M 4/622** (2013.01 - US); **H01M 10/0525** (2013.01 - EP US); **H01M 10/058** (2013.01 - EP US); H01M 4/366 (2013.01 - EP); H01M 4/622 (2013.01 - EP); H01M 6/40 (2013.01 - EP); Y02P 70/50 (2015.11 - EP)

Citation (search report)

- [XPA] WO 2018009363 A1 20180111 - UNIV MASSACHUSETTS [US]
- [A] US 2014072720 A1 20140313 - WATKINS JAMES [US], et al
- [A] US 2004013982 A1 20040122 - JACOBSON JOSEPH M [US], et al
- [AP] ROHIT KOTHARI ET AL: "Direct Patterning of Robust One-Dimensional, Two-Dimensional, and Three-Dimensional Crystalline Metal Oxide Nanostructures Using Imprint Lithography and Nanoparticle Dispersion Inks", CHEMISTRY OF MATERIALS, vol. 29, no. 9, 17 April 2017 (2017-04-17), pages 3908 - 3918, XP055399766, ISSN: 0897-4756, DOI: 10.1021/acs.chemmater.6b05398
- [A] KIM Y ET AL: "Fabrication of a conductive nanoscale electrode for functional devices using nanoimprint lithography with printable metallic nanoink", MICROELECTRONIC ENGINEERING, ELSEVIER PUBLISHERS BV., AMSTERDAM, NL, vol. 87, no. 5-8, 1 May 2010 (2010-05-01), pages 839 - 842, XP026945319, ISSN: 0167-9317, [retrieved on 20100104], DOI: 10.1016/J.MEE.2009.12.062
- See references of WO 2018170474A1

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

DOCDB simple family (publication)

WO 2018170474 A1 20180920; EP 3596764 A1 20200122; EP 3596764 A4 20200415; JP 2020515011 A 20200521; US 11387438 B2 20220712; US 2020091498 A1 20200319; US 2022328802 A1 20221013

DOCDB simple family (application)

US 2018022997 W 20180316; EP 18766918 A 20180316; JP 2019551378 A 20180316; US 201816493971 A 20180316; US 202217808229 A 20220622